

Case Report Section



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Case Report editor

■ In future issues of the *Newsmonthly*, this section will be devoted to the presentation of case reports submitted by readers of the *Newsmonthly*. Any case which involves any phase of anesthesiology practice in dentistry should be sent to the editorial office. This section is edited by Harry A. Sultz, D.D.S. Dr. Sultz, who practices in Buffalo, New York, is a former resident and teaching fellow in anesthesia at the University of Pittsburgh School of Dentistry and Medical Center Hospitals, Pittsburgh, Pennsylvania.

All case reports should be accompanied by the name of the author. Names will be withheld from publication on request.

Post Thiopental Tremors

Sidney Silver, D.D.S., M.S.

■ A 21-year-old female was admitted to the hospital for oral surgery. She appeared in good general condition and had a normal laboratory urine analysis and blood count. She was exceptionally apprehensive but reacted well to premedication with 2 grains of phenobarbital and 1/150 grain of atropine. For the surgical procedure she was induced with .5 per cent thiopental sodium followed by nitrous oxide and oxygen. In all, she received 500 mg. of thiopental sodium in the half-hour pro-

cedure. Her blood pressure and pulse remained normal throughout the surgery.

Upon recovery she began to shake and shiver. Her extremities became stippled and goose-pimpled in appearance. She was returned to her room when in control of her reflexes. Her nurse was ordered to cover her with blankets and to call if the shivering continued for more than ten minutes. When recalled to the patient's bedside, her shaking and shivering had become severe. An intravenous injection of

Demerol® was begun and, within 45 seconds, when 25 mg. had been administered, all extraneous movements ceased and the shivering stopped.

Discussion

It is difficult to explain this generalized tremor which occasionally follows anesthesia with intravenous barbiturates. Many causative agents have been suggested such as pyrogen reaction, carbon dioxide excess, hypoxia, or depression of the temperature regulating center by direct action of the drug. A review of the literature discloses that, with the exception of one article, no careful study has been undertaken to determine its origin or significance. In Smith, Bachman and Bougas' study¹, a series of 259 children were anesthetized with thiopental sodium. They reached the conclusions that:

1. Such tremors represent true thermal shivering.

2. No significant depression of the temperature regulating mechanism was found.

3. The underlying factor is not greater heat loss but increased sensitivity to cold with this agent.

Clinically, thiopental depresses adrenal activity. This is shown by lowered pulse rate and blood pressure, and constricted pupils.

Since the adrenals play an im-

portant part in stimulating heat production by liberating glycogen from liver and muscles, adrenal suppression may be a contributory factor in thiopental shivering. Thiopental also causes increased peripheral dilatation, facilitating heat loss through the skin. Hence, during open or semi-closed technics, large ventilatory heat losses can occur.² Thus, the importance of shivering must not be overlooked.

Beattie³ has indicated that oxygen demand due to muscular activity may be increased 200 to 400 per cent. It is obvious that patients may thus be placed in great danger. Smith, Bachman, and Bougas¹ warn of the dangers of postanesthetic tremors in addition to the increased side effects from premedicants and tranquilizers, and possible hypotension, as well as possible problems from present-day hospital air-conditioning.

Conclusion

1. The causative agent of post-thiopental tremors seems to be an increased sensitivity to cold, not greater heat loss.
2. Regardless of treatment, the tremors will disappear by themselves as the drug is detoxified and the patient recovers.
3. Demerol® administered slowly intravenously is the drug of choice to counteract the tremors.

References

1. Smith R. M., Bachman, L., and Bougas, T. — *Shivering Following Thiopental Sodium and Other Anesthetic Agents*. Anesthesiology 16:655 (Sept. 1955)
2. Clark, R. E., Orkin, L. R., and Rovenstine, E. A. — *Body Temperature Studies in Anesthetized Man: Effect of Environmental Temperature, Humidity, and Anesthesia System*, J.A.M.A. (154:311) Jan 23, 1954.
3. Beattie, J. — *Functional Aspects of the Hypothalamus*, Henderson Trust Lectures, Edinburgh, Oliver and Boyd, 1938.

Comment: This type of reaction is not uncommon with any of the barbiturates used intravenously. Many theories have been advanced as to its cause, some of which are mentioned in this case report.

One explanation, not mentioned, recalls that thiopental does not raise the pain threshold and that any impulses reaching the depressed cerebral cortex may be misinterpreted and produce these generalized muscle twitchings. To bear out this theory, it is generally agreed that premedication or administration of drugs that elevate the pain threshold reduces the incidence of this reaction. H.A.S.



**Component Society Representatives Receive Charters
at A.D.S.A. Miami Meeting, November 3, 1957**

Left to right: James Jones (Alabama); Richard Lowell (New York); Louis Schwartz (Pennsylvania); Morgan Allison (Ohio); Freeman Slaughter (North Carolina); J. D. Whisenand (Iowa); Joseph Osterloh (California); William Kinney (Utah); Sylvan Shane (Maryland); Aaron Moss (New Jersey); Emmett Jurgens (Illinois); Leonard Fox (Massachusetts).